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I, LISA TREVERROW, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. PQ 3020 for a patent by BRITAX RAINSFORDS PTY LTD filed on 23 September 1999.

WITNESS my hand this
Twenty-sixth day of October 2000

Lisa Treverrow

LISA TREVERROW
TEAM LEADER EXAMINATION
SUPPORT AND SALES

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BRITAX RAINSFORDS PTY LTD

ORIGINAL

AUSTRALIA

PATENTS ACT 1990

PROVISIONAL SPECIFICATION FOR AN INVENTION ENTITLED:-

"VIBRATION SUPPRESSED VEHICLE MIRROR"

This invention is described in the following statements:-

The present invention relates to vehicle mounted rear vision mirrors, and in particular to vehicle mirrors mounted external to the vehicle cabin.

BACKGROUND

In order to provide rear vision to the side of a vehicle, many vehicles have mirrors mounted external to their cabin. Such mirrors either provide an alternative rear view to an internally mounted mirror or, in the case of many trucks, provide the only rear view.

With any vehicle mirror, it is important to stabilise the position of the reflective mirror surface providing the rear view with respect to either the vehicle or with respect to the driver. Vibration causing rotational movement of the reflective mirror surface can present a moving or fuzzy rear view image to the vehicle driver. Sources of vibration include the vehicle's engine and small scale vertical vehicle movement caused by the road surface.

Stabilisation of externally mounted mirrors is more difficult than stabilisation of internally mounted mirrors for a number of reasons. Externally mounted mirror housings are subject to additional forces (eg aerodynamic forces) and are often more complex in their design. For instance, external mirrors often require an ability to break away upon impact with a pedestrian and therefore have pivots and detent mechanisms between a vehicle body and a the mirror surface. External mirrors often have motor drive systems for remote adjustment of their position and heating equipment to prevent fogging and/or icing. These additional systems add weight. Heavier mirror housings have greater inertia and therefore are more difficult to attach to the vehicle in a way that ensures they do not vibrate with respect to the vehicle. Generally heavier mirrors are supported by larger and stiffer cantilevered arms. This adds to the cost of the vehicle and can detract from the appearance of the vehicle.

It is therefore an object of the present invention to provide an improved method of stabilising an external vehicle mirror that overcomes at least some of the aforementioned problems.

SUMMARY OF THE INVENTION

According to the invention there is provided a vehicle mirror assembly comprising:

~~a vehicle mount adapted for connection to a vehicle;~~

a mirror housing;

an arm connecting said vehicle mount to said housing; and

a flywheel stabilised mirror connected to said mirror housing;

According to a first aspect of the invention, the flywheel stabilised mirror comprises a mirror mount rotatably supporting a flywheel and supporting a mirror.

According to a second aspect of the invention, the flywheel stabilised mirror comprises a mirror forming part of the flywheel and a mirror mount rotatably supporting the flywheel. Such an assembly has the advantage that it will repel water from the mirror surface.

Connection between the flywheel stabilised mirror and the mirror housing is desirably a suspension means (for instance a spring and damper combination). Such a suspension means will ensure that the flywheel stabilised mirror does not follow any high frequency movements of the vehicle (vibrations), but does follow the vehicle generally, that is, does remain in the same general angular orientation with respect to the vehicle.

A motorised adjusting mechanism may be incorporated to allow adjustment of the general angular orientation of the flywheel stabilised mirror with respect to the vehicle to accommodate different drivers and/or different driving conditions.

A specific embodiment of the invention will now be described in some further detail with reference to and as illustrated in the accompanying figures. This embodiment is illustrative and is not meant to be restrictive of the scope of the invention.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

~~A preferred embodiment of the invention is illustrated in the accompanying~~ representations in which:

Fig 1 shows a side view of the vehicle having an external mirror mounted to it;

Fig 2 shows the vehicle and vehicle mirror of Fig 1 in plan view;

Fig 3 shows a partial front view of the vehicle and external mirror of Figs 1 and 2; and

Fig 4 shows a schematic view of a vehicle mirror assembly viewed parallel to the mirror surface.

Referring to Figs 1 to 3, a vehicle mirror assembly 10 is shown mounted externally to a vehicle 5. The vehicle mirror assembly 10 comprises a vehicle mount 12 connected to an arm 15 connected to a mirror housing 10. A flywheel stabilised mirror 20 is connected to the mirror housing 18. Connection between the flywheel stabilised mirror 20 and the mirror housing 18 is via a suspension means 30, for instance a spring and damper combination. Such a suspension means will ensure that the flywheel stabilised mirror will not follow any high frequency movements of the vehicle 5. At the same time the suspension means will ensure that the flywheel stabilised mirror will generally remain in the same angular orientation with respect to the vehicle 5.

The arrangement shown in Figs 1 to 4 ensures that arm 15 need not have the usual stiffness required for external vehicle mirror housings.

Motor drive system 27 may take various forms. For instance the rotor itself may provide the rotational inertia required to produce the desired stabilisation. A minor eccentricity on the motor itself or the driven flywheel may be provided to cause transverse vibration to act as a dewaterer for the mirror surface 20.

In an alternative embodiment of the invention, the motor drive system may be eliminated and an air-driven flywheel may be used.

Various types of flywheels may be employed to provide stability to the mirror based on the gyroscopic effect they produce.

Although not shown in the drawings, a motorised adjusting mechanism may be incorporated to allow adjustment of the general angular orientation of the flywheel stabilised mirror 20, with respect to the vehicle 5 to accommodate different drivers and/or driving conditions.

While the present invention has been described in terms of a preferred embodiment in order to facilitate better understanding of the invention, it should be appreciated that various modifications can be made without departing from the principles of the invention. Therefore the invention should be understood to include all such modifications within its scope.

Dated this 23rd day of September 1999.

BRITAX RAINSFORDS PTY LTD

By its Patent Attorneys
MADDERNS

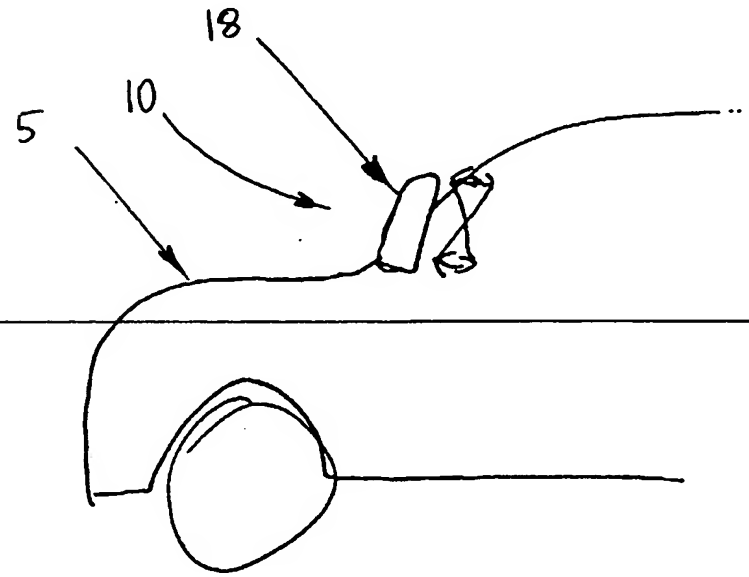

FIG. 1

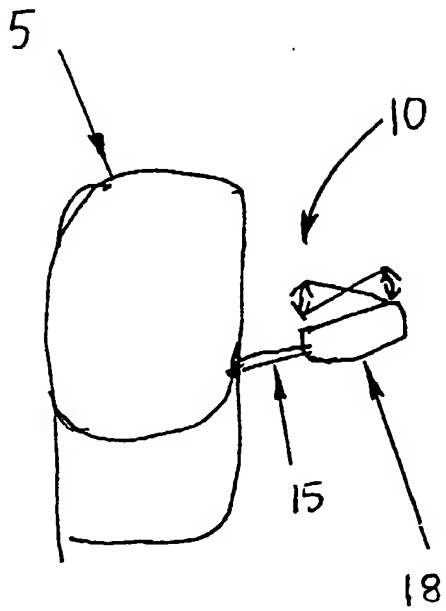

FIG. 2

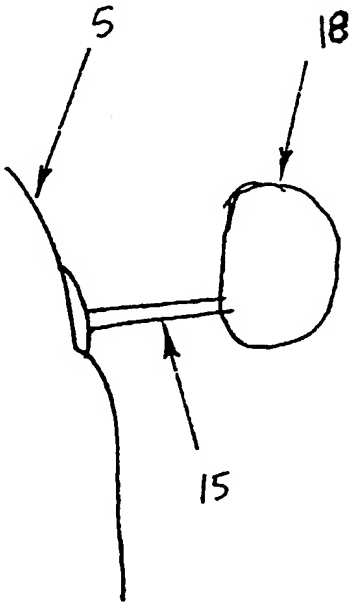

FIG. 3

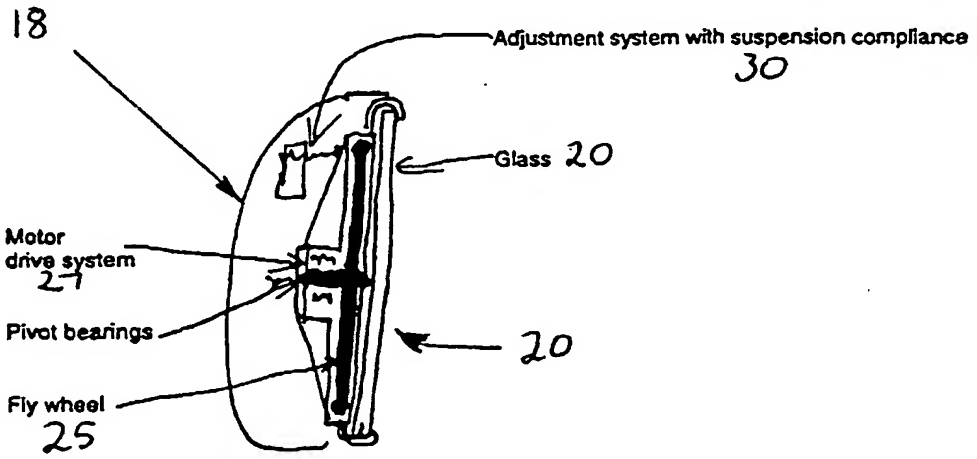
18
Adjustment system with suspension compliance
30
Glass 20
Motor
drive system
27
Pivot bearings
20
Fly wheel
25

FIG. 4